Air Force Efforts to Reduce Acquisition Response Time

Commercial Experience Reducing Development Times

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The 25 Most Popular Business Tools

- **Activity-Based Costing**
- **Agile Strategies**
- **Balanced Scorecard**
- **Benchmarking**
- **Competitive Gaming**
- **Core Competencies**
- **Customer Retention**
- **Customer Satisfaction Measurement**
- ***Cycle Time Reduction***
- **Groupware**
- **Growth Strategies**
- **Knowledge Management**
- **Market Migration Analysis**

- **Mass Customization**
- **Mission and Vision Statements**
- **Pay-for-Performance**
- **Portfolio Analysis**
- **Reengineering**
- **Scenario Planning**
- **Self-Directed Teams**
- **Shareholder Value Analysis**
- **Strategic Alliances**
- **Strategic Planning**
- **Total Quality Management**
- **Value Chain Analysis**

Source: Bain & Company 1996 International Survey

Commercial Industry Comments on Business Tools

- **Very few tools are multi-purpose, i.e., good at "doing it all."**

- **Most management teams still employ too many "fad"-type tools simultaneously in piece-meal attempts to improve performance.**

- ***Cycle Time Reduction* is a multi-purpose management tool that links comprehensive performance improvement with the actions that drive change.**

Source: Bain & Company 1996 International Survey

Industry Satisfaction Survey Results

Cycle Time Reduction as a management tool rated:

- **#1 in achieving financial results**
- **#1 in improving long-term performance capabilities**

- **#2 in overall satisfaction as a management tool**
- **#2 in best tool for use in achieving multiple strategic priorities**

*Strategic planning was rated #1 in these other two areas.

Source: Bain & Company 1996 International Survey

Commercial Product Development Efforts

- **Reducing Product Development Cycle Time is the Organizing Focus For Improvements in Commercial Product Development Processes**

- **Highly rated management tool by industry**
  - **#1 for achieving financial results, long-term performance capabilities**
  - **#2 for overall satisfaction, achieving multiple strategic priorities**

- **'Key to Making Changes in the System'**

- **Obvious Commercial/Competitive Advantages**

- **Real World Results (Across Many Industries)**
  - **Dramatic Decreases in Cycle Time Achieved**
  - **Increased Quality**
  - **Decreased Development Costs**
  - **Dramatic Increases in Number of Products**

Product Development Cycle Time is The Leading Metric of Product Development

Automobile Industry in the Mid 1980's

	Japanese	US
Avg Development Time (Months)	42.6	62.0
Avg Engineering Time (Millions of Hours)	1.2	3.5
Total Product Quality (Rating)	58	41
Employees Per Team	485	903
Number of Body Types per New Car	2.3	1.7
Average Ration of Shared Parts	18%	38%
Supplier Share of Engineering	51%	14%
Engineering Change Cost	10-20%	30-50%
Ration of Delayed Products	1 in 6	1 in 2
Return to Normal Quality New Model (months)	1.4	11

Faster, Better, and Cheaper

Compiled from Machine that changed the World Womack, Jones and Roos and Product Development Performance, Clark and Fujimoto

Commercial Success at Shortening Cycle Times

Industry	Old Time	Current	Goal
Automobile	84 months	24 months	<18 months
Commercial Aircraft	8-10 years	5 years	2 1/2 years
Commercial Spacecraft	8 years	18 months	12 months
Consumer Electronics	2 years	6 months	

50%-70% Reduction In Development Times Are Typ

Commercial Product Development Cycle Time Reduction

Product Development Cycle Time Reduction Research
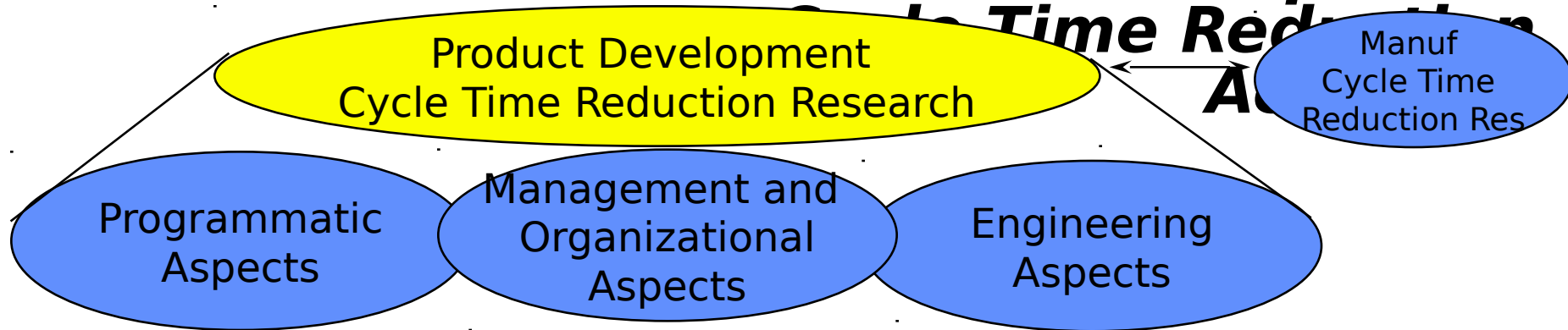
Manuf Cycle Time Reduction Res

Programmatic Aspects

Management and Organizational Aspects

Engineering Aspects

How to Define a Project and its Objectives

How to Organize and Manage a Project

How to Design the Product

- **Project Portfolio Management**
- **Product Line Management**
- **Development Screening**
- **Fast Cycle Time Objective**

- **Long Term Suppliers**
- **Early Supplier Integration in Design**
- **Integrated Product Teams**
- **Integrated Product and Process Development**
- **Order of Activities**
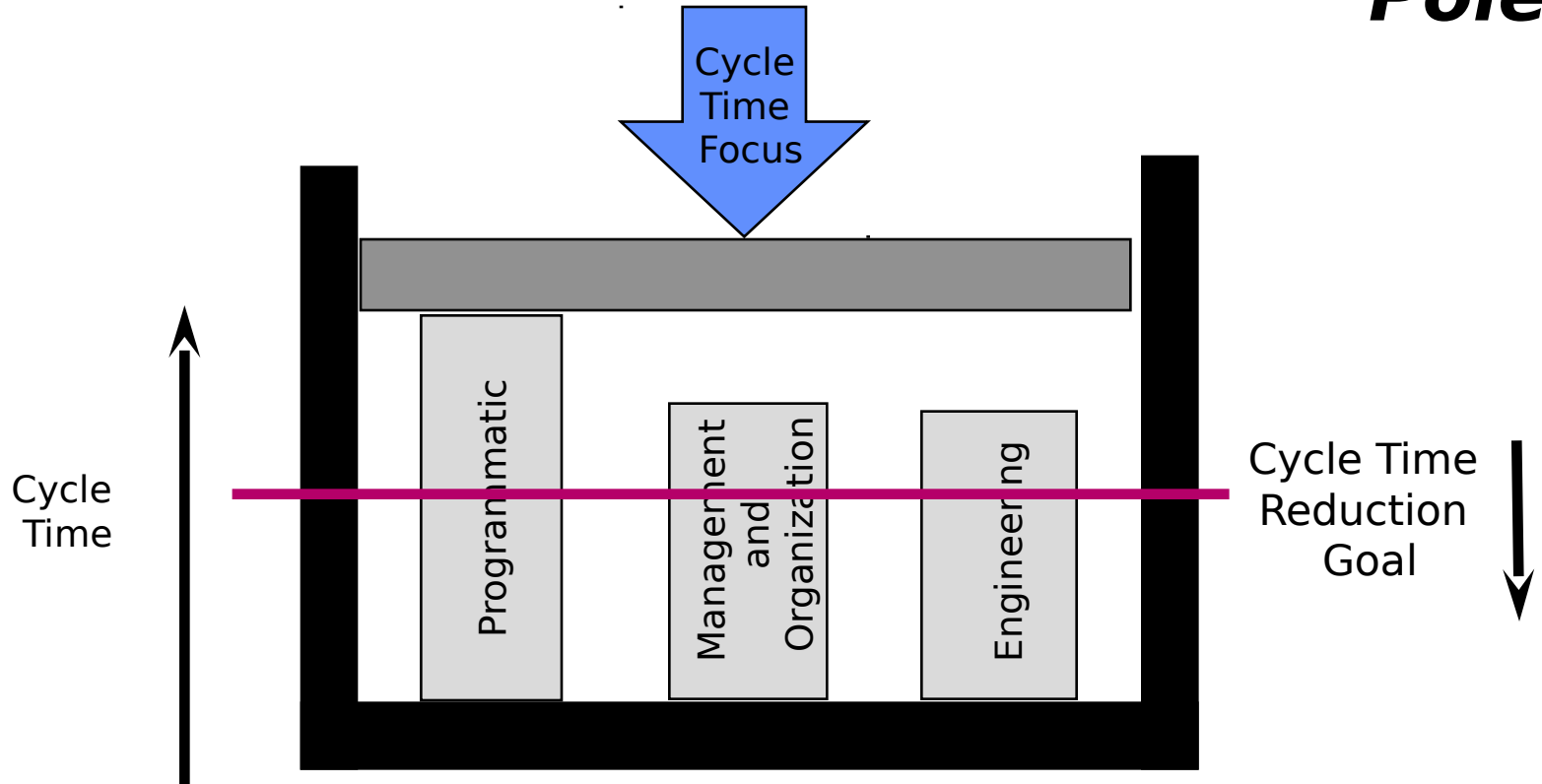- **Co-Location with Suppliers**

- **Integrated Databases**
- **Software Factory**
- **CAD/CAM**
- **Rapid Prototyping**
- **DFM**
- **DFA**
- **QFD**
- **System Engineering Practices**

Shortening the Longest Pole

Cycle Time Focus

Cycle Time

Programmatic

Management and Organization

Engineering

Cycle Time Reduction Goal

Most companies development times are limited by the programmatic a of a project due to poor portfolio management practices. However, ef reduce development time must focus on all aspects of a project

Classic Signs of Poor Portfolio Management

- Large number of projects in development process
- Significant resource contention (people, $, equipment)
- Projects take much longer then necessary
- Many late or delayed projects
- Many projects down-scoped late in development
- Many cancelled projects
- Under performing products in market
- Many projects not meeting sales (production goals cut)
- Lack of personal accountability for project success
- Products not aligned with strategic direction of company

Best Commercial Practice
Project Selection Process

- **Best commercial practices - manages process used to select and manage development portfolio**

- **Lots on information from commercial industry**
  - **Literature, examples, course work**
  - **World-class product development organizations**

- **Competitive Project Selection Process**
  - **Development funnel**
  - **Stages and gates**
  - **Balancing resources and projects to execute projects effectively**

Keys to Effective Portfolio Management

- – **Limiting the number of projects in development to those that can be effectively supported**

- – **Control entry into the development process**

- – **Competitive down selections at phases and gates**

- – **Product line management and portfolio mapping**

- – **Strategic vision of direction of company to guide selections**
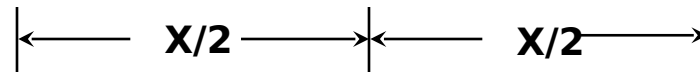
An Alternate Approach to Product Development

Case A

Program 1
Program 2
Program 3
Program 4
Program 5
Program 6

|←——————— X ———————→|

Case B

Program 1	Program 4
Program 2	Program 5
Program 3	Program 6

|←—— X/2 ——→|←—— X/2 ——→|

Current cycle times results from:

– Starting programs too soon

– Starting too many programs

– Inefficient acquisition process

– Tolerance for long cycle times

Reduced cycle times will result in:

– **Development of each in half the time**

– **Fielding of newer technology**

– **Lower cost per project**

– **Reduced exposure to annual funding reductions**

– **Make required modernization more affordable**

Faster Development Time - A Unifying Driver

People involved in development organizations need a vision, an objective that captures their imagination. . . The quest for faster development times has been particularly powerful driver in the 1980s. . . Lead time is like inventory in Just-In -Time manufacturing systems; of itself, a low level of work in progress inventory has some effect, but going after the root causes of excess inventory brings about powerful systems changes.

Kim B.Clark
Dean, Harvard Business School